

What is claimed is:

1. A method of loading a stent on a delivery catheter, the delivery catheter having a proximal end and a distal end, the method comprising:

5 providing a stent having a length, at least a portion of the length of the stent being in a radially contracted position, the stent capable of being dilated from the radially contracted position to a radially expanded position, the stent having a first diameter in the radially contracted position and a second diameter in the radially expanded position, the second diameter being greater than the first diameter;

10 providing the delivery catheter; and

15 mounting the stent, while in the radially contracted position, onto the delivery catheter.

2. The method of claim 1, wherein the step of providing the delivery catheter comprises providing a balloon catheter.

3. The method of claim 1, wherein, in the step of providing the delivery catheter, the delivery catheter has a third diameter, the first diameter being smaller than the third diameter.

20 4. The method of claim 3, wherein the first diameter is smaller than the third diameter by at least 5%.

5. The method of claim 3, wherein the first diameter is smaller than the third 25 diameter by at least 25%.

6. The method of claim 1, wherein the mounting step further comprises providing a means for radial containment of the stent.

7. The method of claim 1, wherein the step of providing the stent comprises providing the stent formed from steel.

8. The method of claim 1, wherein the step of providing the stent comprises 5 providing a stent wherein the entire length of the stent is in the radially contracted position.

9. The method of claim 1, wherein, in the step of providing the stent in the radially contracted position, the stent is radially contracted by forcing the stent into 40 contact with a forming stem.

10. A method of loading a stent on a delivery catheter, the delivery catheter having a proximal end and a distal end, the method comprising:

providing a stent having a length, at least a portion of the length of the stent being in a radially contracted position, the stent capable of being dilated from the radially contracted position to a radially expanded position, the stent having a first diameter in the radially contracted position and a second diameter in the radially expanded position, the second diameter being greater than the first diameter;

providing the delivery catheter;

20 providing a conical sheath disposed about the distal end of the delivery catheter; and

sliding the stent in the radially contracted position over the conical sheath onto the delivery catheter.

25 11. The method of claim 10, wherein the step of providing the conical sheath comprises providing the conical sheath formed from a material having a low coefficient of friction.

12. The method of claim 10, wherein the step of providing the conical sheath comprises providing the conical sheath formed from a flexible material.

13. The method of claim 10, wherein the step of providing the conical sheath 5 comprises providing the conical sheath formed from polytetrafluoroethylene.

14. The method of claim 10, further comprising removing the conical sheath after the stent has been mounted on the delivery catheter.

10 15. The method of claim 10, wherein the step of providing the delivery catheter comprises providing a balloon catheter.

16. The method of claim 10, wherein, in the step of providing the delivery catheter, the delivery catheter has a third diameter, the first diameter being smaller than the 45 third diameter.

17. The method of claim 16, wherein the first diameter is smaller than the third diameter by at least 5%.

20 18. The method of claim 16, wherein the first diameter is smaller than the third diameter by at least 25%.

19. The method of claim 10, wherein the step of sliding the stent on the delivery catheter comprises placing tension on the distal end of the delivery catheter so that it 25 is pulled into the stent.

20. A method of loading a stent on a delivery catheter, the delivery catheter having a proximal end and a distal end, the method comprising:

providing a stent having a length, at least a portion of the length of the stent being in a radially contracted position, the stent capable of being dilated from the radially contracted position to a radially expanded position, the stent having a first diameter in the radially contracted position and a second diameter in the radially expanded position, the second diameter being greater than the first diameter;

5 providing the delivery catheter; and

mounting the stent in the radially contracted position onto the delivery catheter such that the stent is radially expanded during the mounting step to a delivery position, the stent in the delivery position having a delivery diameter, the delivery diameter being greater than the first diameter and less than the second diameter.

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21. The method of claim 20, wherein, in the step of providing the delivery catheter, the delivery catheter has a third diameter, the first diameter and the delivery diameter being smaller than the third diameter.

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22. The method of claim 21, wherein the first diameter is smaller than the third diameter by at least 5%.

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23. The method of claim 21, wherein the first diameter is smaller than the third diameter by at least 25%.

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24. The method of claim 20, wherein, in the step of mounting the stent in the radially contracted position onto the delivery catheter, radial contraction of the delivery catheter occurs.

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25. A method of loading a stent on a delivery catheter, the delivery catheter having a proximal end and a distal end, the method comprising:

providing a stent having a length, at least a portion of the length of the stent being in a radially contracted position, the stent capable of being dilated from the

radially contracted position to a radially expanded position, the stent having a first diameter in the radially contracted position and a second diameter in the radially expanded position, the second diameter being greater than the first diameter;

providing the delivery catheter;

5 providing a conical sheath disposed about the distal end of the delivery catheter;
and

sliding the stent in the radially contracted position over the conical sheath onto the delivery catheter such that the stent is expanded to a delivery position, the stent in the delivery position having a delivery diameter, the delivery diameter being greater than the first diameter and less than the second diameter.

10 26. The method of claim 25, wherein the step of mounting the conical sheath comprises providing the conical sheath formed from a material having a low coefficient of friction.

15 27. The method of claim 25, wherein the step of mounting the conical sheath comprises providing the conical sheath formed from a flexible material.

20 28. The method of claim 25, wherein the step of mounting the conical sheath comprises providing the conical sheath formed from polytetrafluoroethylene.

29. The method of claim 25, further comprising the step of removing the conical sheath after the stent has been mounted on the delivery catheter.

25 30. The method of claim 25 wherein, in the step of providing the delivery catheter, the delivery catheter has a third diameter, the first diameter and delivery diameter being smaller than the third diameter.

31. The method of claim 30, wherein the first diameter is smaller than the third diameter by at least 5%.

32. The method of claim 30, wherein the first diameter is smaller than the third diameter by at least 25%.

33. The method of claim 30, wherein, in the step of mounting the stent in the radially contracted position onto the delivery catheter, radial contraction of the delivery catheter occurs.

34. A stent delivery system comprising:

a delivery catheter; and

a stent having a length, at least a portion of the length of the stent being in a radially contracted position, the stent capable of being dilated from the radially contracted position to a radially expanded position, the stent having a first diameter in the radially contracted position and a second diameter in the radially expanded position, the first diameter being smaller than the second diameter; the stent being mounted on the delivery catheter in a manner that results in the stent being expanded to a delivery position having a delivery diameter, the delivery diameter being greater than the first diameter, the stent being comprised of a material that, when expanded from the contracted position to the delivery position during mounting, results in the stent having at least one state of constraint acting in the direction of radial contraction from the delivery position to the contracted position.

35. The system of claim 34 wherein the delivery catheter is a balloon catheter.

36. The system of claim 34 wherein the stent comprises steel.

37. A kit for the delivery of a stent, the kit comprising:
a delivery catheter having a proximal end and a distal end;
a conical sheath configured to be disposed about the distal end of the delivery catheter; and

5 a stent having a length, at least a portion of the length of the stent being in a radially contracted position, the stent capable of being dilated from the radially contracted position to a radially expanded position;
wherein the stent is configured to be mounted onto the delivery catheter by fitting the stent in the radially contracted position over the conical sheath.

10 38. The kit of claim 37 wherein the conical sheath comprises a material having a low coefficient of friction.

15 39. The kit of claim 37 wherein the conical sheath comprises a flexible material.

40. The kit of claim 37 wherein the conical sheath comprises polytetrafluoroethylene.